

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:
 STARLING et al.

Serial No.: 10/030,578

Filed: April 29, 2002

Atty. File No.: 4141-2-PUS

For: "CALCIUM-CONTAINING STRUCTURES
 AND METHODS OF MAKING AND USING
 THE SAME"

Group Art Unit: 1651

Examiner: Davis, Ruth A.

Conf. No.: 9225

**PRE-APPEAL REQUEST FOR
REVIEW**

Submitted Via Electronic Filing

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellants submit this Notice of Appeal and pre-Appeal request for review to address the final Action having a mailing date of April 27, 2010 and the Advisory Action mailed October 13, 2010. Appellants note that the claim amendments filed on September 24, 2010 have been entered by the Examiner. In addition, a request for an additional month extension of time is being submitted herewith wherein a previous two month extension of time was submitted with the response filed on September 24, 2010. Appellants respectfully request reconsideration of the outstanding rejections in the above-identified application. Please credit any overpayment or charge any underpayment to Deposit Account No. 19-1970.

The final Office Action rejects claims 1-6 and 44-45 under 35 USC §103(a) as unpatentable over Radin in view of Walter et al. (herein referred to as "Walter"), or Jeffries and in further view of Lemons. In addition, the final Office Action rejects claims 1-3, 7-14 and 44-45 under 35 USC §103(a) as unpatentable over Radin in view of Walter or Jefferies and in further view of Gerhart.

Independent claim 1 recites a bone grafting composition comprising

(i) a bone graft material selected from the group consisting of cancellous bone, demineralized bone matrix (DBM) and mixtures thereof, wherein the bone graft material is from about 5% to about 95% by volume of the composition and

(ii) a bone graft extender comprising hollow calcium-containing microstructures.

The final Office Action asserts that “Radin teaches compositions comprising hollow calcium phosphate containing glass shells (abstract) that are combined with biologically active molecules effective to repair bony defects (p.8)”. The final Office action further indicated that “Radin does not teach compositions wherein the biologically active molecule is cancellous bone or DBM”. The final Office Action asserted that Walter teaches cancellous bone is used for filling or repairing bone defects and that Jefferies teaches DBM is useful for repairing bony defects. The final Office Action therefore concluded it would have been obvious to one of ordinary skill in the art to use cancellous bone and/or DBM in the composition of Radin to arrive at the claimed composition, since they were known in the art to be biologically active molecules effective for repairing bony defects (page 3 of the final Office Action).

Appellants respectfully submit that the biologically active molecules of Radin are not equivalent to, do not anticipate, nor render obvious the bone graft material of the current claims (i.e. cancellous bone or DBM) and there is no teaching, suggestion, or motivation to combine Walter (cancellous bone) or Jefferies (DMB) with Radin as the biologically active molecules of Radin to arrive at the current claims wherein the bone graft material is from about 5% to about 95% by volume of the composition.

As discussed in the response filed September 24, 2010, Radin teaches the use of biologically active molecules as a coating and that a skilled person would understand from Radin, that if such coatings were to be used, they would be in small amounts well outside of the claimed range of 5% to 95% by volume. Appellants refer to the Remarks section and the Declaration by Dr. Keyvan Behnam submitted with the response filed September 24, 2010 for support of this statement which clearly indicates that the only amount of biologically active molecule disclosed in Radin is well below the 5% to 95% of the presently claimed composition (found in Example 1 of Radin with an amount of 0.12%). Moreover, cancellous bone and DBM disclosed by Walter or Jefferies are not within the meaning of the biological active molecules of Radin as they are not coatings. There is no motivation to combine the cited references and there would be no expectation of success because the elements (Radin – biologically active materials used as a coating vs. Walter - cancellous bone or Jefferies - DMB) are not equivalent and not used in the same manner in relation to

the hollow calcium-containing microspheres of the present claims. Therefore, the Examiner has not established a *prima facie* case of obviousness. The cited combination of references do not meet, *inter alia*, the claim limitation of a bone graft material (cancellous bone, demineralized bone matrix and mixtures thereof) being from about 5% to about 95% by volume of the composition.

Thus, the assertion in the final Office Action that it would have been obvious to substitute the bone graft material of the present invention for the biologically active molecules of Radin is incorrect. As discussed in the response submitted January 28, 2010 Radin teaches the use of hollow particles as a bone graft material, and not the use of any other bone graft material which the hollow particles would extend. In addition, as described above, Radin does not teach or suggest the claim limitation of a bone graft material, in addition to the hollow particles, being from about 5% to about 95% by volume of the composition. The Examiner indicated in the Advisory Action (mailed 10/13/2010) that Jefferies teaches 35% DBM bone graft materials. However, since Radin's amount of biologically active material is well below the 35% amount disclosed in Jeffries, or even the claimed amount of 5%, and the DBM used in Jefferies is not used as a coating, there is again no motivation for one of skill to combine the teachings of the references. Accordingly, the Examiner has not established a *prima facie* case of obviousness.

In addition, Radin's disclosed processes for coating microstructures require that the "biologically active molecules" be soluble. As described in the response submitted January 28, 2010 the immersion coating process defined in Radin (p. 7, ll. 33-37) relies on allowing a soluble biological molecule to either incorporate into the calcium phosphate layer or attach to the surface. The claimed bone graft materials of cancellous bone and DBM are insoluble, further supporting that the biologically active molecules of Radin are not in any way equivalent to the bone graft material of the current claims and further supporting that there is no motivation for one of skill to use cancellous bone or DBM as described by Walter or Jeffries in the composition of Radin.

The final Office Action (mailed 4/27/2010) goes on to point out that Radin does not teach microstructures comprising each of the claimed materials and takes the position that it would have been obvious to use any of the claimed materials since they were routinely used in such compositions. Lemons is used by the Examiner to support this assumption stating

that Lemons teaches a composition comprising calcium particles made from sintered tricalcium phosphate and/or hydroxylapatite. However, Lemons does not make up for the deficiencies of Radin, Walter and Jefferies as described above and thus no *prima facie* case of obviousness has been established.

In regard to Gerhart, the final Office Action (mailed 4/27,2010) asserts that “Gerhart teaches that cements are well known and commonly used in compositions for repairing and fixing bone defects” and that one of skill in the art would have been motivated by the teachings of Gerhart to include the claimed cements or polymers as a bonding agent in the composition of Radin. Gerhart does not make up for the deficiencies of Radin, Walter or Jeffries as discussed above. Gerhart does not disclose hollow microstructures. Since Gerhart does not make up for the deficiencies of Radin, Walter or Jeffries, no *prima facie* case of obviousness has been established and withdrawal of this rejection is respectfully requested.

The claims are distinguishable over the above cited references and withdrawal of the outstanding rejections with a remand to the Examiner recommending a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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Date: October 27, 2010